



# Tauchpumpe Submersible pump

**ZM**



**ZM 280  
ZM 280 A  
ZM 280 KS**



**ZM 650  
ZM 650 A  
ZM 650 KS**

**Betriebsanleitung  
Operation manual**

## Declaration of conformity

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We, the

**ZEHNDER Pumpen GmbH**  
**Zwönitzer Straße 19**  
**08344 Grünhain - Beierfeld,**

herewith declare  
that the submersible pumps of the type series:

ZM 280, ZM 280 A ZM 280 KS , ZM 650, ZM 650 A ZM 650 KS

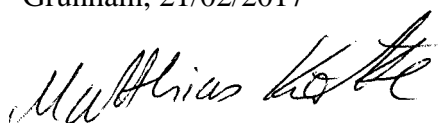
conform to the following relevant regulations:

- **EC low voltage directive 2014/35 EU**
- **EMC directive 2014/30 EU**
- **Machinery directive 2006/42/EC**

Applied conform standards, particularly

EN 60335-1:2012/A11:2014  
EN 60335-2-41:2003/A2:2010  
EN 809:1998/AC:2010  
EN 55014-1:2006/A2:2011, EN 55014-2:1997/A2:2008  
EN 61000-3-2:2014, EN 61000-3-3:2013  
EN 61000-6-1:2007, EN 61000-6-2:2005, EN 61000-6-3/A1:2011, EN 61000-6-4/A1:2011

Grünhain, 21/02/2017



Matthias Kotte  
Product development

## 1.0 General

### 1.1 Introduction

This operation manual is valid for the submersible pump of the type series **ZM**.

**If the instructions of the operation manual – especially the safety instructions - are not observed, or in case of unauthorized modifications of the device or the installation of nonoriginal spare parts, the guarantee expires automatically. The manufacturer assumes no liability for damages resulting from such behaviour!**

Such as any other electrical device, this product may fail due to absence of mains voltage or a technical failure. If damage could occur, an emergency power supply, a second plant and/or an off-grid alarm device should be provided according to the application. We as manufacturer are at your disposal for consultation also after the purchase. In case of failures or damages, please contact your retailer.

**Manufacturer:** ZEHLNDER Pumpen GmbH  
Zwönitzer Straße 19  
08344 Grünhain-Beierfeld

**Date of manufacture:** The date of manufacture of the pump is engraved on the top of the housing.

**Manufactured sizes:** ZM 280, ZM 280 A, ZM 280 KS  
ZM 650 ZM 650 A, ZM 650 KS

**State of the operation manual:** April 2017

### 1.2 Enquiries and orders

In case of enquiries or orders, address yourself to your retailer and/or specialist retailer.

### 1.3 Technical data

<b>TYPE:</b>	<b>ZM 280 ZM 280 A ZM 280 KS</b>	<b>ZM 650 ZM 650 A ZM650 KS</b>
<b>Pressure pipe connector</b>	<b>1"</b>	<b>1"</b>
<b>max. particle size</b>	<b>10 mm</b>	<b>10 mm</b>
<b>Output P1</b>	<b>300 Watt</b>	<b>600 Watt</b>
<b>Output P2</b>	<b>160 Watt</b>	<b>350 Watt</b>
<b>Power reception</b>	<b>1.3 A</b>	<b>2.9 A</b>
<b>Supply cable</b>	<b>10 m 3 x 1mm<sup>2</sup></b>	<b>10 m 3 x 1mm<sup>2</sup></b>
<b>Floating switch</b>	<b>no</b>	<b>no</b>
<b>max. discharge flow</b>	<b>7,000l/h</b>	<b>9,000l/h</b>
<b>max. discharge height</b>	<b>6.0m</b>	<b>11.0m</b>
<b>max. submersion depth</b>	<b>5.0 m</b>	<b>5.0 m</b>

**Materials:**

Pump housing:	Polypropylene (PP)
Outer housing:	Polypropylene (PP)
Bottom filter:	Polyethylene (PE)
Motor housing:	Stainless steel
Running wheel:	PA 6
Floating switch:	Polypropylene (PP)
Screws:	Galvanised steel; stainless steel
Motor shaft:	Stainless steel

The submersible pumps ZM are applicable up to a liquid temperature of 40 °C.

## 1.4 Range of application

The pumps of the ZM series are suitable for conveying slightly polluted water with suspended particles (no stones) up to 10mm grain size from private households, industry and agriculture. The size of the suspended matter shall not exceed the maximum grain size of 10 mm. **The pumps are not approved for the extraction of sewage containing faeces.**

## 1.5 Accessories

The pumps are delivered with a hose connection piece with a nut connector for a 1" hose (diameter 25 mm).

## 2. Safety

(from: "VDMA sheet 24 292")

The operation manual at hand provides basic notes which must be taken into account during assembly, operation and maintenance works. Therefore, before assembly and commissioning, this operation manual must be read by the assembler as well as by the responsible personnel/operator at all costs. It always must be available on site of operation of the device.

The general safety notes listed under the main point safety are not the only notes to be taken into account. Please also observe the specific safety instructions, such as those for private use, listed under other main points.

### 2.1 Marking of the notes contained in the operation manual

The safety notes contained in this operation manual which can cause danger to persons are specifically marked by the following general danger symbol



Safety sign according to DIN 4844 - W 9

The following symbol warns against dangers caused by voltage



Safety sign according to DIN 4844 - W 8

In case of safety notes the non-observance of which can cause danger to the device and its functioning, the word **ATTENTION!** is inserted.

Notes that are directly attached to the device, such as

- Arrow indicating the direction of rotation
- Characteristics of liquid connections

must be observed and kept in completely readable condition at all costs.

### 2.2 Personnel development and training

The personnel for operation, maintenance, inspection and assembly shall have the appropriate qualifications for such work. The responsibility, responsibility and supervision of the personnel must be precisely regulated by the operator. If the necessary knowledge is not available to the staff, they must be trained and instructed. This can, if necessary, be carried out by the manufacturer / supplier on behalf of the pump operator. Furthermore, the operator must ensure that the contents of the operating instructions are fully understood by the personnel.

This equipment may be used by children over 8 years of age and over, as well as by persons with reduced physical, sensory or mental abilities, or lack of experience and knowledge when supervised or instructed regarding the safe use of the equipment and the resulting dangers. Children must not play with the appliance. Cleaning and user maintenance must not be carried out by children without supervision. manual.

### 2.3 Dangers in case of non-observance of the safety notes

The non-observance of the safety notes can cause dangers to persons as well as to the environment and the machine. If the safety notes are not observed, this can result in the loss of all compensation claims.






In detail, non-observance can for instance result in the following damages **as an example:**

- Failure of important functions of the pump
- Failure of the prescribed methods for maintenance and repair
- Endangerment of persons through electrical, mechanical and chemical influences
- Endangerment of the environment through leakage of hazardous substances

## 2.4 Safety-conscious way of working

The safety notes listed in this operation manual, the existent national regulations on accident prevention as well as possible internal working, operating, and safety instructions of the operator must be observed.

## 2.5 Safety notes for the operator/user

-  - Hot or cold device components which could cause danger must be secured against contact by the customer.
-  - The pumps are equipped with a thermal winding cover, if the motor cools down, the pump starts automatically. Due to this fact, the device must be disconnected from mains during repair or maintenance works!
-  - Protection against contact with moving parts (e.g. coupling) must not be removed while the machine is operating.
-  - Leakages (e.g. of the shaft sealing) of hazardous materials to be conveyed (e.g. explosive, toxic, hot) must be discharged in such a way that no danger arises for persons or the environment. The legal requirements must be observed.
-  - Endangerments through electric power must be eliminated (details concerning this, see e.g. the regulations of the VDE (German Association for Electrical, Electronic and Information Technology) and the local energy suppliers).

## 2.6 Safety notes concerning maintenance, inspection, and assembly works

The operator must make sure that all maintenance, inspection, and assembly works are carried out by authorised, skilled, and qualified personnel which are adequately informed by having thoroughly studied the operation manual.

Only use original spare parts.

Generally, works on the machine are only to be carried out when the pump is turned off. The proceeding prescribed in the operation manual in order to stop the pump must be respected at all costs.

Pumps or pump units conveying media dangerous to health must be decontaminated. Immediately after finalising the works, all safety and protection installations must be reinstalled and/or activated.

Before restart, the points listed in the chapter commissioning must be taken into consideration.

## 2.7 Unauthorised modification and fabrication of spare parts

Retrofitting and modifications of the switching device are permitted only after having consulted the manufacturer. Original spare parts and accessories authorised by the manufacturer ensure the safety. The use of other parts can lead to the removal of liability for the resulting damages.

## 2.8 Unauthorised modes of operation

The operational reliability of the machine is only guaranteed, if it is used as intended according to chapter 1 – General. The limit values stated in the data sheet must not be exceeded.

### ATTENTION

**Also a device operating automatically such as a submersible pump must not be operated without supervision for a longer time period. If you leave the device unattended for a longer time period, please disconnect it from mains.**

### 3.0 Description

The pumps are equipped with a sturdy alternating current motor; the sealing of the pump housing to the motor is executed using two radial shaft sealing rings and/or a mechanical seal. The current is connected using the 10 m long connecting cable with 230 V-50 Hz alternating current.



- The pump must be connected to a socket with earthing.
- Never carry the pump on the cable, never low it on cable into the water; never pull it on cable out of the water.
- If the power is not supplied obligatory via an earth leakage circuit breaker with maximum measured residual current of 30 mA, the pump must be connected via a separate earth leakage circuit breaker to the socket



- The use of the pump at swimming pools and garden ponds and within their protection zones is only permitted if the plants located there are installed according to DIN VDE 0100/part 702. It is forbidden to take a bath in the pool during operation of the pump. Ask your professional electrician.

### 4.0 Installation and commissioning



- Before commissioning of the pump, check it for possible external damages (e.g. transport damages), in order to prevent accidents with electrical power.

**A minimum water level of 40 mm is necessary for a proper operation of the pump (exhausts to 20 mm).**

If the pump shall be used in a cavity or a shaft the shaft/cavity must have a minimum dimension of 450 x 450 x 450 mm. The suction basket must not be blocked by sludge and/or media containing fibres.

The floating switch attached to the pump (in case of ZM...A, KS) must be freely moveable. If the water level raises, the floater floats, switches the pump on and discharges the water until the water level is low that the floater switches the pump off. The switching- on and switching-off height of the floater can be varied by displacing the floater cable inside of the mounting eye. The function of the floater can be checked by lifting and lowering.

For pumps with compact floats (ZM ... KS), the switching points can be changed by moving the floats on the bar. The function can be checked by lifting the bar with the floats.

**The pump must be absolutely vertical, especially with the version with compact float!**

In case of pumps without floating switch, the pumping process starts with connecting the plug to the socket.



- In order to prevent damage to the shaft sealing or the mechanical seal, the pump must not run dry.

### 5.0 Maintenance



- **Disconnect the power supply before carrying out any kind of work on the pump and protect it against unauthorised reconnection!**

Maintenance contains an inspection and a cleaning of the pump housing. By releasing the 4 sheet metal screws on the lower side of the pump, the bottom filter may be removed from the pump housing. After cleaning, reassemble these parts in reversed order and retighten the 4 screws.

#### Attention!

In case of a worn running wheel (e.g. due to abrasive media) a wear of the shaft sealing ring and/or the mechanical seal is also possible. The inspection of the shaft sealing ring and the motor as well as the replacement of the electric connecting cable should be effected by authorised after-sales services or by manufacturing factory only.

## 6.0 Technical modifications

..... reserved for the purpose of further development.

## 7.0 Warranty

As manufacturer, for all pumps we provide a warranty of 24 months from date of purchase.

Your sales receipt passes for verification.

During that warranty period, we gratuitously remedy all deficiencies which are attributed to material or fabrication defects by either repairing or replacing the pump (to our choice).

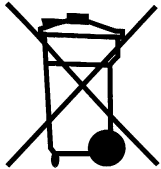
Defects which are attributed to misuse or wear (running wheel and shaft seal) are excluded from warranty.

Furthermore, the warranty claim expires if works (excepting those under point 5) are effected on the pump.

We will assume no responsibility for consequential damages that are caused by a breakdown of the pump.

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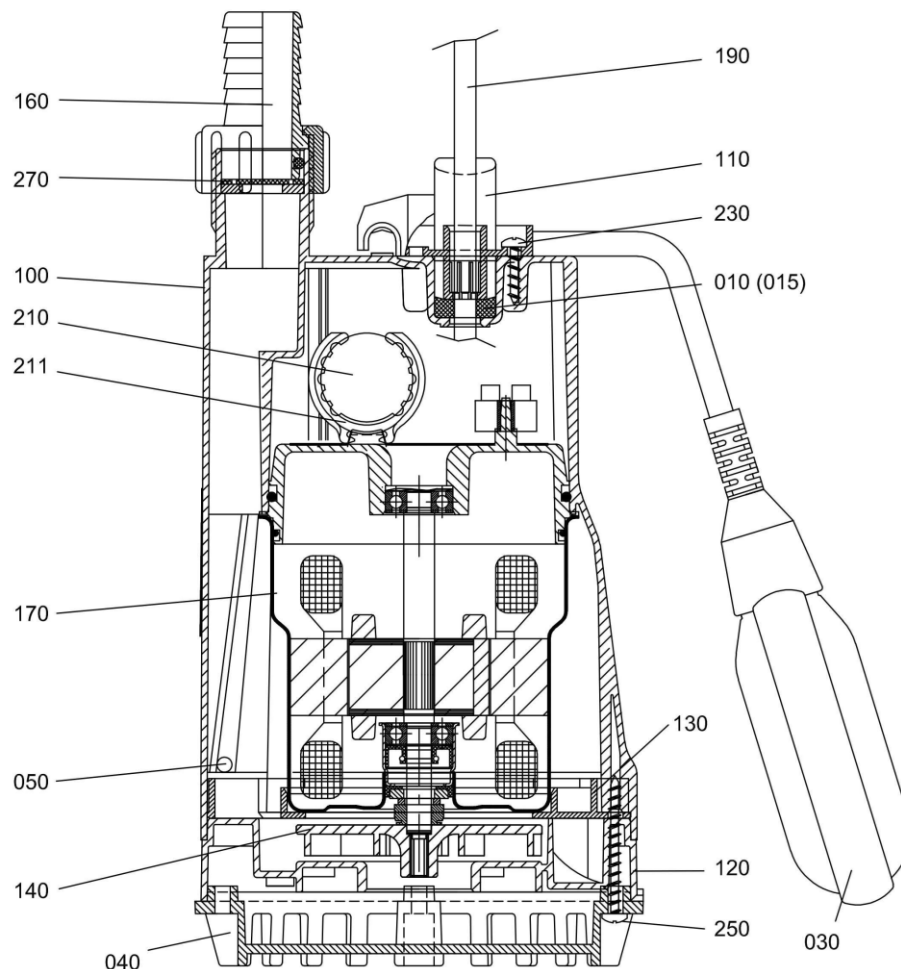
Only for EU countries

Do not put the pump into the household waste!

According to the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment and transposition into national law, wasted electronic tools must be collected separately and must be recycled in an environmentally compatible manner.

## 8.0 Spare parts list and sectional drawing ZM 280

ZngPos	G.-Menge	ME	ArtNr	Bezeichnung	
010	1,000	Stk	12624	U-scheibe 8,4x16x1,6 vz	
015	1,000	Stk	15739	Dichtring d=6	
015	1,000	Stk	15737	Dichtring d=9	...KS/A...
015	1,000	Stk	15755	Dichtstopfen NBR 50	ZM280...
030	1,000	Stk	14550	Kompaktschwimmer für ZM280	...KS...
030	1,000	Stk	13149	Schwimmersch. 0,57m OPTI1 gelb	A
040	1,000	Stk	15783	Bodensieb 10mm ZM280/MST-G glb	
050	1,000	Stk	15742	Kugel 5,5 mm, G28	
100	1,000	Stk	10200	Außengehäuse TDP/ZM/FSP bearb.	
110	1,000	Stk	15757	Handgriff MST f. H05 schwarz	
120	1,000	Stk	15758	Pumpengehäuse MST schwarz	
130	1,000	Stk	10234	Stützring MST natur	
140	1,000	Stk	15765	Laufgrad MST Ø80	
160	1,000	Stk	15753	Schlauchtülle G1 x 25	
170	1,000	Stk	12669	Motoreinheit FSP 330/ ZM 280	
190	1,000	Stk	15778	Kabel H05 RN-F 10,15 m GKS	
210	1,000	Stk	15791	Kondensator 5uF 2xGKS	
211	1,000	Stk	10131	Kondensatorhalterung MST	
230	2,000	Stk	15794	Senkschr.Kreuzschl.3,5x19-A2	
250	4,000	Stk	15782	Linensblechsch. 3,9x50-A2	
270	1,000	Stk	11888	Rückschlagklappe D27 EPDM	
	2,000	Stk	15297	Linensblechsch. 3,9x16 A2	
	1,000	Stk	11035	Linsenschraube M4x8-H vz	
	1,000	Stk	10823	Zahnscheibe-Federstahl 4.3 A2	
	1,000	Stk	10366	Unterlegschr. PE 13,0x26,5x3,0	
	1,000	Stk	11895	O-Ring 20x4,0	
	1,000	Stk	15752	Überwurfmutter G1"	
	2,000	Stk	16950	Linsenschraube M4x10 A2DIN7985	...KS...
	1,000	Stk	16949	Halter für Schwimmerschalter	...KS...
	2,000	Stk	15298	Linensblechsch. 3,9x32 A2	...KS...





## 9.0 Spare parts list and sectional drawing ZM 650

ZngPos	G.-Menge	ME	ArtNr	Bezeichnung	
010	1,000	Stk	12665	Motoreinheit ZM 650	
020	1,000	Stk	15737	Dichtring d=9	
020	1,000	Stk	15737	Dichtring d=9	
020	1,000	Stk	15755	Dichtstopfen NBR 50	
030	1,000	Stk	15742	Kugel 5,5 mm, G28	
040	1,000	Stk	10668	O-Ring 120x2,5-NBR70	
050	1,000	Stk	15756	Handgriff MST f. H07, schwarz	
060	1,000	Stk	10276	Pumpengehäuse ZM 351/ZM 650	
070	1,000	Stk	10278	Abstreifplatte ZM351 / ZM650	
100	1,000	Stk	10287	Bodensieb 10mm ZM351/650 schw	
110	1,000	Stk	15753	Schlauchtülle G1 x 25	
120	1,000	Stk	13146	Schwimmerschalter 0,57m OPTI1	
170	1,000	Stk	10131	Kondensatorhalterung MST	
190	1,000	Stk	10200	Außengehäuse TDP/ZM/FSP bearb.	
210	6,000	Stk	15297	Linsenblechschr. 3,9x16 A2	
240	4,000	Stk	15297	Linsenblechschr. 3,9x16 A2	
240	4,000	Stk	15297	Linsenblechschr. 3,9x16 A2	
240	4,000	Stk	15297	Linsenblechschr. 3,9x16 A2	
250	1,000	Stk	13459	Laufgrad ZPK Ø105	
260	1,000	Stk	13130	Kabel H07 RN-F3G1,0 10,15m	
290	1,000	Stk	13687	Kondensator 8 µF ZP	
	1,000	Stk	11895	O-Ring 20x4,0	für Pos. 110
	1,000	Stk	15752	Überwurfmutter G1"	für Pos. 110

